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Attitudes of Teachers and Principals Toward Nutrition Education in South Dakota Elementary Schools

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ATTITUDES OF TEACHERS AND PRINCIPALS TOWARD NUTRITION EDUCATION IN SOUTH DAKOTA ELEMENTARY SCHOOLS

BY

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ATTITUDES OF TEACHERS AND PRINCIPALS TOWARD
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This thesis is approved as a creditable and independent investigation by a candidate for the degree, Master of Science, and is acceptable for meeting the thesis requirments for this degree. Acceptance of this thesis does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

_____ Thesis Advisor Date

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Abstract

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Under the supervision of Professor Edna Page Anderson

and Professor Wayne A. Johnson

A survey of 361 elementary teachers and 285 principals in the state of South Dakota measured attitudes toward nutrition education in the elementary school. Attitudes of elementary teachers toward teaching nutrition were also assessed. Relationships between attitudes, nutrition knowledge and other characteristics were determined.

Results are based on the returned responses of 272 teachers and 262 principals. Significant positive correlations were observed between elementary teachers' attitudes toward nutrition education, nutrition knowledge, and their attitudes toward teaching nutrition. Attitude scores of teachers and principals were found to vary significantly with the inclusion of nutrition in school curriculum and favorable perceptions of each other's attitudes toward nutrition education. Respondents' age, community size and college nutrition background did not significantly affect their attitudes toward nutrition education. Overall, elementary teachers' and principals' attitudes toward nutrition education in the elementary school were favorable.

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CHAPTER I

INTRODUCTION

In this day of increasing consumer awareness, a strong emphasis is being placed upon education of the individual to maintain personal health. Disease prevention and health maintenance are becoming a high priority in society (Hegsted, 1977; Robinson, 1976; Ullrich, 1974).

With this emphasis on individual health maintenance, nutrition is increasingly being viewed as a key factor and much attention is now being focused in the area of nutrition education. Though nutrition education has often been seen as a "frill" subject and only at the high school level, it is now viewed as appropriate for lifelong learning.

Significance Of The Problem

One of the recommendations of the 1969 White House Conference on Food, Nutrition and Health (White House Conference on Food, Nutrition and Health, Final Report, 1970) was that a comprehensive and sequential program of nutrition education be included as an integral part of the curriculum of every school in the United States. Since then several states have developed nutrition education policies and programs. Johnson and Butler (1975) surveyed the nation and found that of the forty-two states responding, ten had legislated policy concerning nutrition education, and thirty-one had someone within the state who had a major responsibility for nutrition education.

One might ask, "Why all this fuss over nutrition education?" Ullrich (1974, p. 84) answers the question by stating that "Nutrition

education is survival education." The world is currently in a period of rapid change. Our once abundant resources are becoming limited. The threat of mass starvation grows as the worlds population increases exponentially. Energy, ecology and economic crises are becoming household words. Optimal nutritional health for all people is impossible without responsible citizens that are nutrition-educated.

Many authorities blame the American diet for contributing to death and disability in the United States (Hegsted, 1977; Robinson, 1976). A report of the Senate Select Committee on Human Needs (Dietary Goals For the United States, 1977) identified six of the top ten killer diseases in the nation as being related to nutrition. While there is considerable disagreement among nutritionists as to the exact relationship of diet to the etiology of these diseases, it cannot be disputed that nutrition does play an important role.

There is considerable evidence that the American diet is, indeed, deteriorating. A review of several studies dealing with the vitamin and mineral intakes of individuals in the United States revealed that 2 to 12 percent of the population had intakes below one half of the Recommended Dietary Allowances (Davis, Gershoff and Gamble, 1969). These researchers concluded that all age groups and segments of the population are affected by nutrition problems.

The 1965-66 U.S.D.A. Household Consumption Survey compared the diets of households in the United States in 1965 with diets in 1955 (Adelson, 1968). It was discovered that the number of diets classified as "good" had decreased from 60 percent to 50 percent in the ten year span, whereas diets rated as "poor" had increased from 15 percent in

1955 to 20 percent in 1965. This decline in dietary habits was attributed to decreased consumption of milk, vegetables and fruit. Adelson (1968) points out that the increased consumption of convenience and "fast" foods and increased intake of snack foods associated with affluence and greater mobility has contributed to decreased variety in the American diet.

Light (1974, p. 129) observes that "as far as nutrition education is concerned, these are 'the best of times and the worst of times.'" These are good times because there seems to be a growing interest in nutrition on the part of the government, consumers and health care providers. The bad times are a result of confusion over nutrition issues among authorities and the lay public alike. More than ever before the consuming public needs sound nutrition education to make food-related decisions.

White (1976, p. 54) develops the argument for nutrition education by providing reasons for giving nutrition education top priority:

1. To equip one to make judicious food choices for health and well-being. Good nutrition is vital to the achievement of one's genetic potential.

2. A good knowledge of nutrition is essential for the maintenance of health, especially when food habits temporarily or permanently deteriorate--as in dieting, illness, old age and poverty and when an educational base might fail leading to "faddish" experimentation.

3. Food and nutrition education is necessary for saving money and avoiding waste. In essence nutrition education relates scientific knowledge to the total strategy for survival.

4. Nutrition education is a base for the evaluation of food and nutrition information, both good and bad.

5. Nutrition education can be of great benefit to those in the lowest economic stratum. While not as important as financial resources, nutrition education can equip the person who finds himself economically deprived to make the most expeditious use

of financial resources.

6. Nutrition education is essential to reinforce or correct family teaching about food and nutrition.

Statement of the Problem

Several states have taken the lead to develop nutrition education programs (Johnson and Butler, 1975). Through these projects, attempts have been made to integrate nutrition curricula into all levels of learning. The emphasis of many of the curricula has been to impart factual information in the hopes that the information will be used by the student to make proper food choices. However, recent studies have shown that the desired outcome of good food choices is not always achieved by imparting factual knowledge (Grogan, 1978; Cosper, Hayslip and Foree, 1977; Picardi and Porter, 1976; Spitze, 1976; Schwartz, 1973; Poolton, 1972; Lewin, 1943).

Some researchers have found that the most significant changes in eating behavior have resulted from nutrition education in the preschool and elementary grades (Rappenthal, 1977; Dunkley and Beardall, 1974; Cooper and Philp, 1974; Head, 1974; Musgrave and Thornbury, 1974; Bell and Lamb, 1973; Alford and Tibbets, 1971; Glaser, 1957). Others have observed from the study of the impact of nutrition education upon various grade levels, that the younger children tend to show greater improvement in attitudes and eating behavior than children in upper grade levels (Brown, Wyse and Hansen, 1979; Blakeway and Knickrehm, 1978; Head, 1974). It would seem wise, then, to focus upon nutrition education in the elementary school, because eating patterns are more rigid

and difficult to change as the child grows older.

Several recommendations were made at the 1969 White House Conference on Food, Nutrition and Health (White House Conference on Food, Nutrition and Health, Final Report, 1970) as to what nutrition concepts should be taught, to whom, and how this should be accomplished. However, it is not enough to know what the government and nutritionists say should be taught. Van Manen (1977, p. 209) states:

> The predominant concern of educational practice has become an instrumental preoccupation with techniques, control, and with means-ends criteria of efficiency and effectiveness. Critics have argued that this instrumental-practical preoccupation of curriculum prevents more consequential questions from being asked: the question of determining what is, in fact, most worth the students' while, with respect both to purposes and experiences provided by the curriculum.

In assessing what is "worthwhile," it is vitally important to find out how those directly involved at the individual school feel about nutrition education. Several authors have emphasized that the success of a nutrition education program depends upon the cooperation and enthusiasm of school personnel (Cutler, 1976; Garvey, 1975; Martin, 1975; Chethik, 1974; Head, 1974; Lavigne and Siegel, 1965). Without the support and ideas of teachers and principals, it is futile to attempt to integrate nutrition education into curriculum.

If the state of South Dakota is to implement a nutrition education program that is valuable and effective, it is necessary to first identify the attitudes and feelings of these influential people toward nutrition education. This study will explore the following questions:

> What are the attitudes of elementary teachers and principals toward nutrition education in the elementary school?
>
> What are the attitudes of elementary teachers toward teaching

nutrition to their students?

What, if any, are the relationships between these attitudes and selected factors such as nutrition knowledge, nutrition background, size of community, age, and whether or not nutrition is being taught in the school?

CHAPTER II

REVIEW OF LITERATURE

The purpose of this study was to assess the attitudes of elementary teachers and principals toward nutrition education and measure elementary teachers' attitudes toward teaching nutrition. The focus of the literature reviewed was on two main areas: (1) the value of nutrition education in the elementary school, and (2) the importance of studying attitudes of elementary teachers and principals toward nutrition education in the elementary grades. With few exceptions, only studies reported in the past ten years have been reviewed.

Value Of Nutrition Education In The Elementary School

In determining the importance of teaching nutrition to elementary students, it is necessary to answer certain questions:

(1) What is the present nutritional status of children in the United States?

(2) What is the effect of poor nutritional status on health and the child's learning capacity?

(3) What does influence a child's eating behavior?

(4) Will teaching nutrition to children really influence their dietary habits?

Nutritional status of children in the United States. Researchers have established that the diets of the American population are deteriorating (Parrish, 1971; Davis et al., 1969; Adelson, 1968). One might reasonably ask, how does this trend affect the nutritional status of the

child in the United States? Results of a study which measured dietary intakes of 113 preschool children in New York showed that only 17 percent consumed diets which complied with the Basic Four Food Guide (Caliendo, Sanjur, Wright and Cummings, 1977). Although there was no evidence of "gross, clinical malnutrition," 22 percent of the children were anemic, 12 percent of the children's heights and 8 percent of their weights were below the fifth percentile for their age. Dietary consumption was found to be significantly related to weight.

Other researchers have found that many grade school children are not consuming balanced diets (Callahar, 1971; Patterson, 1971). Callahan (1971) surveyed children in Massachusetts and reported that only 53 percent of the children surveyed in grades one through twelve consumed a "satisfactory" or "good" lunch. Only 5 percent of the children ate a "good" breakfast on the survey day. Thirteen percent had eaten no breakfast. The study indicated that the quality of the diet became worse as the age of the child increased.

The results of a dietary survey of fourth, fifth and sixth grade children in the Phoenix metropolitan area showed that 63 percent of children in a "high socio-economic class" had diets below two thirds of the Recommended Dietary Allowances for one or more nutrients. Seventy-one percent of the children of "low socio-economic status" had similarly deficient diets (Patterson, 1971).

Other studies of junior high age students (Hinton, Eppright, Chadderdon and Wolins, 1968; Mirenda, 1966) resulted in similar conclusions. Hinton et al. (1968) identified specific deficiencies in milk, fruit and vegetable intakes.

Effect of nutritional status on health and learning. The relationship of nutrition to health and learning is significant in the discussion of the importance of nutrition education. Balsey, Brink and Speckmann (1968) emphasized the role of improper diet in many of the problems of adolescence, such as obesity, undernutrition and general poor health.

A correlation between physical measurements, such as stature and body size, and dietary intake has been reported by many authors (Patterson, 1971; Crispin, Kerrey, Fox and Kies, 1968; Mitchell, 1962, Greulich, 1957). Greulich (1957, p. 489) found that California-born Japanese children were "taller, heavier and more advanced skeletally, and during the pre-pubertal period, distinctly longer-legged than children in Japan." The author felt that this difference was primarily a result of improved nutritional status of the California-born children.

Research findings linking physical health and dietary intake have been studied for their implications for learning. Stewart (1971) maintains that diet may influence intellectual performance, social acceptance, learning, body structure and central nervous system function. Schubert (1970) attributes a decrease in rashes and infections plus improved alertness and stamina of elementary school children on an Indian reservation in Tulalip, Washington to improved nutrient intake. An emphasis on nutrition education and the provision of two well-planned meals per day for the subjects in the Schubert study resulted in a rise in daily overall attendance, a decrease in the school dropout rate, fewer discipline and vandalism problems and fewer grade failures.

The effect of malnutrition on the brain and intellectual performance has been well documented (Chase and Martin, 1970; Monckeberg, 1969;

Winick and Ross, 1969). Malnourished children have a smaller head circumference and brain mass (Winick and Ross, 1969).

A practical study of the effect of omitting breakfast on twenty-five adolescent school boys (Tuttle, Daum, Larsen, Salzano and Roloff, 1954) concluded that learning was indeed hampered. The authors felt that both attitudes and scholastic attainments of the boys were affected on the days they missed breakfast.

Influences on children's eating behavior. Teaching young children good eating habits is especially important because there are so many outside influences on food choices. Yperman and Vermeesch (1979) found that parental attitudes and social factors were the most important predictors of elementary school children's food preferences and dietary complexity. Gussow (1971) reported that the diets promoted on television commercials aimed at children were "counternutritional" in that they implied that only sweet things taste good. Clancy-Hepburn, Hickey and Nevill (1974) observed that younger children were more influenced by ads in relation to their snack food consumption than were older children.

Influence of nutrition education on eating behavior. Poolton (1972, p. 110) expressed "continuing concern for the gap between knowledge and application in the daily eating patterns of children, youth and adults." Secondary home economics teachers in Colorado were questioned about improvements observed in nutrition practices of students as a result of a nutrition unit. "Emphatic comments were made about the widespread lack of correlation between the nutrition facts the students know and application of information outside the classroom" (Poolton,

1972, p. 110).

A review of the literature in this area seems to indicate that the earlier a child is taught nutrition, the greater the effect on the child's eating behavior. Studies which have measured the effect of nutrition education on eating behavior at the high school level generally show that although nutrition knowledge may be enhanced, no significant changes in eating practices occur (Grogan, 1978; Picardi and Porter, 1976; Spitze, 1976; Schwartz, 1973).

Most of the nutrition education programs conducted for fourth and fifth graders reported in the literature resulted in either only slight improvements in eating behavior or no changes at all (Cosper et al., 1977; Jenkins, Stumo and Voichik, 1975; Baker, 1972). One study of fifth graders did show significant, though not dramatic, changes in dietary practice (Bell and Lamb, 1973).

Research involving the influence of nutrition education on children ages eight (third grade) and younger has produced more encouraging results. Rappenthal (1977) found that a nutrition education project in grades one through three resulted in a highly significant reduction in plate waste. Dunkley and Beardall (1974) reported similar results of a four-week nutrition program for seven and eight year-olds in Ontario, Canada. Some improvement in claimed eating behavior by students was found by Cooper and Philp (1974) when nutrition was taught to students in kindergarten through third grade.

Nutrition education at the preschool level has also been successful in improving children's eating habits. Musgrave and Thornbury (1974) found that not only did preschoolers try a greater variety of foods as a

result of nutrition education, but they were also more relaxed at mealtime. Formerly disliked foods were better accepted by nursery school children in New Mexico after learning about nutrition (Glaser, 1957). Parents reported a carry over of food acceptances at home as well. The consumption of four commonly rejected vegetables by preschoolers in Colorado increased significantly after a nutrition education project (Harrill, Smith and Gangever, 1972).

Studies of the effect of nutrition education at several grade levels support the premise that nutrition taught at an early age is more effective in changing eating habits. Blakeway and Knickrehm (1978, p 391) conclude that "eating patterns are more rigid and difficult to change in third grade than in first and second grade children." The amount of change in food acceptability decreased progressively at higher grade levels in a school nutrition education program for fifth, seventh and tenth graders (Head, 1974). A greater increase in vegetable consumption was observed for three-year-olds by Harrill et al. (1972) than for older children.

Importance Of Teachers' And Principals' Attitudes Toward Nutrition Education

Very little research has been conducted concerning the attitudes of teachers and principals toward nutrition education. However, several authors have identified enthusiastic and supportive attitudes of school personnel as strong determinants of success in nutrition education programs (Eisenhauer and Bell, 1976; Cutler, 1976; Garvey, 1975; Hardwick, 1975; Head, 1974; Schubert, 1970; Lavigne and Siegel, 1965).

Garvey (1975, p. 108), in reference to nutrition education programs, comments that "cooperation and teamwork are really the keys to affect change."

Administrators' attitudes toward nutrition education. Support from principals is desperately needed in any school nutrition education program. Garvey (1975) feels that the attitudes of principals are critical since these individuals are influential in policy- and decision-making and prioritizing curriculum materials. Head (1974) discovered that plate waste decreased more among junior high students subjected to a nutrition education program in schools where principals were committed to the importance of nutrition education than in schools where there was no such committment. A recent study in Georgia showed that "the attitude of the building principal has the greatest single effect upon pupil participation in school lunch programs" (Martin, 1975, p. 24).

Aburdene (1977) feels that school administrators do not really care about the nutrition of students. A survey conducted by the American School Board Journal (1974) indicated that 87 percent of school administrators support placing more emphasis on "the basics" such as reading and math. If nutrition education is not a priority for the principal, any nutrition program may be doomed to failure from the start.

Teacher attitudes toward nutrition education. Teacher enthusiasm was considered to be the "single most important factor" that contributed to the success of the mandated Los Angeles nutrition education program (Cutler, 1974). Cook, Eiler and Kaminaka (1977) surveyed elementary teachers and found that the teachers' opinions of the importance of

nutrition education was significantly related to whether or not they taught nutrition. The amount of time spent teaching nutrition was also directly related to how important the teacher felt nutrition education was.

Teacher attitudes may very well affect the students' learning. Although little research has been done on the relationship between teacher attitudes and student performance, Taddeo (1977) suggests that the attitude of the teacher has a very definite impact upon the students' learning and development. A study in North Carolina clearly showed that "when an individual teacher was committed to nutrition there was more success (in improving student attitudes toward food) than there was in classes in which the teacher felt forced into teaching nutrition" (Head, 1974, p. 58).

The relationships between teacher attitudes and their teaching practices, and attitudes and student learning have important implications for states or school districts desiring to implement mandatory nutrition education. Negative teacher attitudes may make nutrition education a waste of time or even give the learner a negative connotation to nutrition.

Relationship between knowledge and attitudes. In-service nutrition education for teachers is often thought of as an appropriate method for developing positive attitudes toward teaching nutrition (Callahan, 1973; Sodowsky, 1973). It is thus pertinent to look at the relationship between nutrition knowledge and attitudes toward nutrition and nutrition education.

Minimal research has been done in this area, especially in assessing elementary teachers' knowledge and attitudes. One study of elementary teachers in Nebraska (Peterson and Kies, 1971) showed no relationship between nutrition knowledge and favorable attitudes toward teaching nutrition.

A positive relationship between nutrition knowledge and attitudes toward nutrition has been reported by authors studying non-teacher populations. Schwartz (1976) found a significant and direct positive relationship between nutrition knowledge and attitude toward nutrition among Canadian public health nurses. Positive correlation between nutrition knowledge and attitudes has also been reported in other studies (Sims, 1976; Bremer and Weatherholtz, 1975; Eppright, Fox, Fryer, Lamkin and Vivian, 1970). A study of women athletes (Werblow, Fox and Henneman, 1978) indicated similar results with higher knowledge and attitude scores associated with nutrition education.

Summary

Certain inferences and conclusions can be drawn from the literature reviewed here:

(1) Nutrition education is important in the elementary school for several reasons:

   (a) Many children are not well nourished.

   (b) Poor nutritional status may affect both the physical health and learning capabilities of children.

   (c) Outside influences, such as television advertising, are adversely affecting children's food choices.

   (d) Changes in eating behavior are more likely to occur if nutrition is taught to children in the lower elementary grades than to older children.

(2) Favorable attitudes of elementary teachers and principals toward nutrition education are important to the success of school nutrition education programs.

(3) Attitude toward nutrition seems to be directly related to nutrition knowledge.

CHAPTER III

METHODOLOGY

The purpose of this study was to assess the attitudes of elementary principals and teachers toward nutrition education and teachers' attitudes toward teaching nutrition.

Design

Several designs were considered for this study, including interviews, observation and questionnaires. The survey-questionnaire design was chosen due to its ease of administration, low cost and convenience for the large geographical area under study. Limitations to this design were considered and are discussed elsewhere.

Population And Sampling

Three hundred eighty-six elementary teachers (10 percent of the population) were surveyed in the state of South Dakota. The sample was randomly selected from a comprehensive list of teachers provided by the South Dakota Division of Elementary and Secondary Education. Only kindergarten through sixth grade teachers were included in the sample.

The entire population of elementary (grades kindergarten through eight) principals in South Dakota were also surveyed. A total of 285 names were compiled from the South Dakota Division of Elementary and Secondary Education Educational Directory (1978-9).

Operational Definitions

To understand the purpose and scope of this study, two variables

need to be defined. They are "attitude" and "nutrition education."

Attitude. A distinction between opinions, beliefs and attitudes must be made to determine specifically what was measured in this study. Oskamp (1977, p. 19) states that "beliefs, opinions, values and habits are concepts which are related to the concept of attitude, but are not synonymous with it."

Oskamp (1977) mentions several features that are characteristic of attitudes. "Readiness for response" implies that an attitude is not a behavior but rather a predisposition toward a certain behavior. The "motivating" force of attitudes to impel behavior is also emphasized. Oskamp (1977) writes of the "relatively enduring" nature of attitudes, a reference to their stability over time. He stresses the "evaluative" aspect of attitudes, that is, a predisposition to respond in a favorable or unfavorable manner to the attitude object(s).

Oskamp (1977, p. 10) gives three component parts of attitudes:

1. Cognitive component--ideas and beliefs which the attitude-holder has about the attitude object.
2. Affective component--feelings and emotions one has toward the object.
3. Behavioral component--one's action tendencies toward the object.

Thus, ideas, beliefs and feelings are included in the definition of attitude. Oskamp (1977) equates opinions with beliefs; they are primarily cognitive and generally narrower in scope than attitudes.

It should be noted here that attitudes constitute a readiness for response, but they are not behavior per se. Thus, they cannot be directly observed. Conclusions about attitudes must be reached through

a process of inference, based on the study of responses which are observable (Oskamp, 1977).

Oskamp (1977, p. 15) describes attitudes as "unobservable intervening variables which influence the relationship between stimulus events and behavioral responses." This relationship is diagramed in Figure 1.

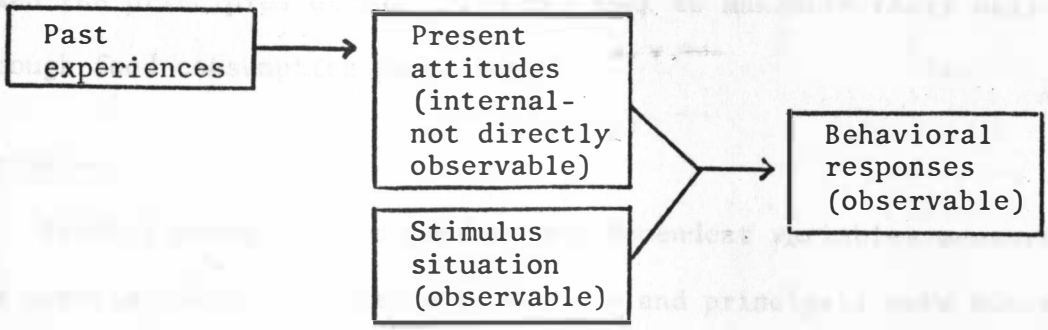

Figure 1 (Oskamp, 1977, p. 15)

Relationship of Attitudes to Behavior

The attitude questionnaire, then, is employed to provide a stimulus situation (attitude statements) which induces an observable behavioral response (selection of response indicating agreement or disagreement). The behavioral response is measured by allocating points to degree of support or opposition to the stimulus.

For the purposes of this study, the term attitude is defined as a mental state of readiness, organized through experience, exerting a directive influence upon the individual's favorable or unfavorable response to a particular object or situation (Oskamp, 1977) as measured by a questionnaire. In this case, the objects warranting response are statements concerning nutrition education and the teaching of nutrition

in the elementary school.

Nutrition education. Nutrition education is defined as the process by which scientifically valid information about the role food plays in our lives and the use of nutrients by our bodies is imparted to individuals in a manner such that those receiving the information will understand the principles of nutrition and seek to maximize their well-being through food consumption practices.

Variables

Table 1 shows the independent and dependent variables measured by the questionnaires. Elementary teachers and principals were surveyed in separate mailings.

Hypotheses

Hypotheses for this study are as follows:

1. There is no relationship between elementary teachers' attitudes toward nutrition education and...
   (a) their nutrition knowledge,
   (b) their attitude toward teaching nutrition,
   (c) their college nutrition background,
   (d) the size of the community in which they teach,
   (e) their age,
   (f) whether or not they include nutrition as part of classroom teaching and how, and
   (g) their perception of the principal's attitude toward nutrition education.
2. There is no relationship between elementary teachers' attitudes toward teaching nutrition and...

Table 1

Independent and Dependent Variables

Sample surveyed	Dependent variables	Independent variables
Elementary teachers	Attitude toward nutrition education in the elementary school Attitude toward teaching nutrition	Nutrition knowledge Nutrition background in college Size of community Age Inclusion of nutrition in classroom instruction Perception of principal's attitude toward nutrition education
Elementary principals	Attitude toward nutrition education in the elementary school	Nutrition background in college Size of community Age Inclusion of nutrition in schools curriculum Perception of teachers' attitudes toward nutrition education

(a) their nutrition knowledge,

(b) their college nutrition background,

(c) the size of the community in which they teach,

(d) their age,

(e) whether or not they include nutrition as part of classroom teaching and, if so, how, and

(f) their perception of the principal's attitude toward nutrition education.

3. There is no relationship between elementary principals' attitudes toward nutrition education in the elementary school and...

(a) their college nutrition background,

(b) the size of the community in which they work,

(c) their age,

(d) whether or not nutrition is included as part of classroom curriculum and if so, how, and

(e) their perception of teachers' attitudes toward nutrition education.

Instrumentation

A review of the literature revealed that few scales have been constructed to measure attitudes toward nutrition education, and no one scale is widely used. Selected nutrition attitude instruments were reviewed during the development of the questionnaire for this study, and some ideas were gathered from previous surveys (Peterson and Kies, 1971; Lohr and Carruth, 1979).

Description of survey instruments. Elementary teachers and principals were sent similar but separate surveys. A four-part instrument was constructed to obtain data about elementary teachers (see Appendix A). The sections of the survey assessed (1) background information, (2)

nutrition knowledge, (3) attitude toward nutrition education in the elementary school and (4) attitude toward teaching nutrition. The two-part survey sent to principals measured background information and attitude toward nutrition education in the elementary school (see Appendix B).

The nutrition knowledge section included in the survey sent to elementary teachers was developed by another researcher for a related study (see Appendix A, p. 66). The knowledge and attitude questionnaires were combined to reduce mailing costs since the same sample was used for both projects. The attitude data was analyzed independently of the knowledge data. Thirteen background questions were developed jointly by both researchers to measure dependent variables used in either one or both of the studies.

Background questions similar in format and content to those used in the teachers' survey were sent to the principal sample. This seven-item section was the source of some of the dependent variables studied.

A twenty-statement Likert-type questionnaire measuring attitude toward nutrition education was administered to both elementary teachers and principals. One minor alteration in wording was made to direct the statement to the specific sample being surveyed. Specifically, question six was changed in the following way:

Teachers' Survey	"Compared to the other subjects I teach, nutrition is a frivolous subject."
Principals' Survey	"Compared to other subjects taught in the elementary grades, nutrition is a frivolous subject."

Elementary teachers' attitudes toward teaching nutrition were assessed by a second attitude questionnaire consisting of sixteen

statements. This questionnaire was not administered to the sample of elementary principals.

Both survey instruments in their entirety are included in the Appendix. Appendix A contains the survey sent to elementary teachers. The survey administered to elementary principals is found in Appendix B.

Development of attitude questionnaire. The development of attitude statements included in the surveys involved several steps. First, attitude statements specific to nutrition education were obtained from a variety of sources, especially elementary teachers and other educators. Friends and acquaintances of the researcher were asked informally what they thought about nutrition education in the elementary grades. A list of these responses was compiled by the researcher. Sample attitude questionnaires (Shaw and Wright, 1967) provided models for constructing attitude statements from the list of responses.

Attitude statements were selected for clarity, variety in wording and content that seemed to relate to the attitude being measured. General guidelines for writing attitude statements were taken from Oskamp (1977) and Shaw and Wright (1967). An attempt was made to use only unidimensional items or those which measured only one underlying attitude (Oskamp, 1977). However, this aspect is difficult to measure and is beyond the scope of this study. Agreement response bias was eliminated by wording half the statements in a favorable direction and half in an unfavorable direction. These considerations improved the validity of the instruments (Oskamp, 1977).

Response to attitude statements was measured by a seven-category

Likert-type scale as shown in Figure 2. Responses ranged from "Strongly Agree" (scored as one point) to "Strongly Disagree" (scored as seven points). This format was chosen because of the familiarity of categories and ease of responding.

1 = Strongly Agree	5 = Slightly Disagree
2 = Tend to Agree	6 = Tend to Disagree
3 = Slightly Agree	7 = Strongly Disagree
4 = Undecided	

Figure 2

Attitude Response Scale

Nineteen senior home economics students were asked to respond to twenty statements measuring attitude toward nutrition education in the elementary school and eighteen items measuring attitude toward teaching nutrition (see Appendix C). The results of the pretest were analyzed statistically for internal consistency as a measure of reliability. Individual item scores were correlated with totals of the subscale of which they were a part. Items were discarded or rewritten if the correlation coefficient was less than .20 or significant at the .40 level.

Although .20 can be considered a relatively "low" correlation, for the purposes of this study it was considered to be high enough to retain the item. It would seem that if all items correlated highly with the total score on a subscale, the items would not truly measure the full scope of the attitude. This would be especially true for the pretest

group of home economics students, who would be expected to have positive attitudes toward nutrition education.

The final instruments (see Appendices A and B) included all items not rejected by correlation plus a few statements that were added upon the judgement of the researcher. The final instrument contained a total of twenty items that measured teachers' and principals' attitudes toward nutrition education in the elementary school and sixteen items that measured teachers' attitudes toward teaching nutrition.

Administration Of The Instruments

The questionnaires, accompanied by short cover letters (see Appendices A and B) were mailed to elementary teachers and principals in the spring of 1979. Participants were requested to return the survey in a self-addressed stamped envelope. Surveys were coded by number to facilitate follow-up. However, replies were kept anonymous. After three weeks a second letter and survey were sent to those who had not yet responded. Both letter and survey were kept as short as possible to facilitate response. Effort was made to keep the survey clear and easy to read.

Of the 386 questionnaires mailed to elementary teachers, 272 or 71 percent were returned. Ten of the surveys were discarded resulting in 262 usable surveys or 68 percent of the sample.

Of the 285 questionnaires mailed to elementary principals, 236 or 83 percent were returned. Only six of the surveys could not be used leaving 230 usable surveys (81 percent).

Scoring And Analysis

A seven-point Likert-type scale was used to measure item response. A score of seven indicated a highly favorable response or agreement with a statement, a score of one, an unfavorable response or disagreement. Numerical scores were reversed for statements stated positively, that is, a response of seven was scored as one; four was scored as three, etcetera. Items stated negatively were numbers three, four, six, seven, nine, ten, twelve, thirteen, fifteen and sixteen on the attitude toward nutrition education in the elementary school scales. Numbers three, six, seven, eight, nine, ten, fourteen and sixteen on the attitude toward teaching nutrition scale were stated negatively.

Results were analyzed by computer using analysis of variance between mean attitude scores for various subgroups as defined by the independent variables. Also, Pearson product-moment correlations between knowledge, attitudes toward nutrition education and attitudes toward teaching nutrition were calculated for the sample of elementary teachers. Attitude scores were expressed as mean score for each subscale. Unanswered items were omitted from calculation of mean scores.

Limitations Of The Study

An obvious limitation of this study is the limited pretesting of the survey instrument. Some pretesting was done to insure validity and reliability, but the primary purpose of the study was not instrument development as an end in itself.

Oskamp (1977) comments that a common limitation of all attitude scales is that they are ordinal rather than equal-interval scales. In

other words, one cannot be sure that the actual attitudinal distance between two values on the scale is equal to the distance between two other values. The distances may be numerically equal, but their psychological equality is questionable.

Carelessness, the tendency to give socially desirable answers, response extremity, and the tendency to agree with an item regardless of its content are all possible limitations in attitude research. Care has been taken in this study to minimize these problems by emphasizing to respondents the importance of the results in statewide decision-making about curriculum, by balancing the item responses between favorable and unfavorable statements, and by assuring anonymity for the respondents.

CHAPTER IV

RESULTS AND DISCUSSION

Three hundred sixty-one elementary teachers and 285 elementary principals were surveyed in this study. Attitudes toward nutrition education in the elementary school and toward teaching nutrition were assessed for teachers. Principals were evaluated for their attitudes toward nutrition education in the elementary school. This chapter describes the results obtained from the respondents.

Computer Analysis Of Data

The Statistical Package for the Social Sciences was used to compute analyses of variance for attitude scores in relation to teacher and principal characteristics. Pearson product-moment correlation coefficients between attitude and knowledge scores were also determined from this statistical package. The South Dakota State University computer center was the site of all statistical operations.

Characteristics Of Teachers

A description of the research sample is an integral component of attitude methodology. This information communicates the degree to which results from an instrument can be generalized to similar groups in subsequent research. Table 2 describes the demographic characteristics of the elementary teachers in the sample.

Teachers in the sample taught a cross-section of grade levels. An unusually large number of teachers (22 percent) taught combined grade

Table 2

Frequency and Percent of Responses on Demographic Data Obtained from Teacher Sample

Characteristic	Frequency	Percent
Grade(s) or Subjects Taught		
kindergarten	16	6.1
first grade	23	8.8
second grade	29	11.1
third grade	34	13.0
fourth grade	28	10.7
fifth grade	31	11.8
sixth grade	28	10.7
combined grades	58	22.1
reading (Title I)	15	5.7
Total	262	100.0
Age		
20 - 35 years	105	40.1
36 - 50 years	77	29.4
51 + years	80	30.5
Total	262	100.0

Table 2 (Continued)

Characteristic	Frequency	Percent
Community Size		
under 500	63	24.4
500 - 2,000	62	24.0
2,000 - 5,000	41	15.9
5,000 - 15,000	36	14.0
over 15,000	56	21.7
Total	*258	100.0

*Four teachers did not respond to this item.

levels. This reflects the fact that 27 percent of the elementary schools in South Dakota have only one teacher (South Dakota Division of Elementary and Secondary Education Educational Directory, 1978-9). Other grade levels were represented evenly in the sample.

The majority of the teachers (40 percent) were between the ages of twenty and thirty-five. Twenty-nine percent ranged from ages thirty-six to fifty, and 31 percent were over fifty. Thus, South Dakota elementary teachers may be described as being fairly young in age.

Nearly half (48 percent) of the teachers in the sample taught in communities with populations of 2,000 or less. The sparse population of the state of South Dakota is reflected in this statistic.

Other data collected from the elementary teacher sample are summarized in Table 3. Half (50 percent) of the teachers had no formal nutrition training. This figure is high compared to the findings in similar studies (Peterson and Kies, 1971; Silvey, 1963). Only 7 percent had taken a nutrition course in college. However, 43 percent of the teachers received some nutrition instruction as part of other college courses.

Methods of teaching nutrition were included in the college coursework of 29 percent of the teachers. In comparison, 14 percent of the elementary teachers surveyed by Peterson and Kies (1971) had methods for teaching nutrition in college.

The majority of teachers surveyed (76 percent) included nutrition as part of their classroom instruction. This finding corresponds to similar results reported by Peterson and Kies (1971) in a survey of elementary teachers in Nebraska. Nutrition was taught by 86 percent of the Nebraska sample. Cook et al. (1977) reported that approximately 85 percent of

Table 3

Frequency and Percent of Responses on Miscellaneous Data Obtained from Teacher Sample

Characteristic	Frequency	Percent
College Nutrition Background		
separate course	19	7.3
included in other course	113	43.1
not included	130	49.6
Total	262	100.0
College Background in Methods of Teaching Nutrition		
separate course	12	4.7
included in general methods	62	24.0
not included	184	71.3
Total	*258	100.0
Inclusion of Nutrition in Classroom Teaching		
separate unit	114	44.0
integrated into curriculum at each grade level	84	32.4
not taught	61	23.6
Total	**259	100.0

* Four teachers did not respond to this item.
**Three teachers did not respond to this item.

elementary teachers in New York and 78 percent in Northern New Jersey taught nutrition to their students.

Characteristics Of Principals

Table 4 summarizes demographic information obtained from the sample of elementary principals. Almost half (48 percent) of the principals were in the age range of thirty-six to fifty years. Eighteen percent ranged from twenty to thirty-five. Thirty percent were over fifty. The higher ages of principals in comparison to teachers are reflective of the experience that is often required to become a principal.

The majority of the principals (61 percent) worked in communities with populations under 2,000. This data is similar to that obtained from the teachers sample (see Table 2, p. 30).

Miscellaneous background information assessed by the survey is shown in Table 5. Forty-eight percent of the principals had no nutrition coursework in college compared to 50 percent of the teachers surveyed (see Table 3, p. 33). A separate college course in nutrition was taken by 4 percent of the sample, and 49 percent had nutrition included in another course.

Eighty-five percent of the principals said that nutrition was required as part of the curriculum of their schools in at least some grade(s). A majority of schools (72 percent) included nutrition in every grade. Only 15 percent did not require nutrition education according to the survey. The accuracy of these statistics is questionable, though, because the wording of the question was not clear.

Table 4

Frequency and Percent of Responses on Demographic Data Obtained from Principal Sample

Characteristic		Frequency	Percent
Age			
20 - 35 years		41	17.8
36 - 50 years		111	48.3
51 + years		78	33.9
	Total	230	100.0
Community Size			
under 500		58	25.4
500 - 2,000		81	35.5
2,000 - 5,000		16	7.0
5,000 - 15,000		20	8.8
15,000 +		53	23.2
	Total	*228	99.9

*Two principals did not respond to this item.

Table 5

Frequency and Percent of Responses on Miscellaneous Data Obtained from Principal Sample

Characteristic	Frequency	Percent
College Nutrition Background		
separate course	8	3.5
included in other course	111	48.5
not included	110	48.0
Total	*229	100.0
Inclusion of Nutrition in School Curriculum		
separate unit	21	9.2
integrated into curriculum at each grade level	143	62.4
not required	34	14.8
other	31	13.5
Total	*229	99.9

*One principal did not respond to each of these items.

Relationship Between Knowledge And Attitudes

Although several studies have reported positive correlations between nutrition knowledge and nutrition attitude, very few have studied the relationship of knowledge to attitude toward nutrition education in the elementary school. Peterson and Kies (1971) found no relationship between these variables, but the instrument used in the study was unrefined and had not been evaluated for validity and reliability.

The following null hypotheses were tested by Pearson product-moment correlation:

(1) There is no relationship between elementary teachers' attitudes toward nutrition education and their nutrition knowledge.

(2) There is no relationship between elementary teachers' attitudes toward nutrition education and their attitudes toward teaching nutrition.

(3) There is no relationship between teachers' attitudes toward teaching nutrition and their nutrition knowledge.

Table 6 shows the results of the correlation of the three variables. Positive correlations between all three variables were observed at the .001 level of significance. Thus, the null hypotheses can be rejected, and one can tentatively conclude that there are significant relationships between teachers' attitudes toward nutrition education and their nutrition knowledge, teachers' attitudes toward nutrition education and their attitudes toward teaching nutrition, and teachers' attitudes toward teaching nutrition and their nutrition knowledge.

Table 6

Correlations Between Teachers' Knowledge and Attitudes

	Attitude Toward Nutrition Education	Attitude Toward Teaching Nutrition
Nutrition Knowledge	$r = .3202$ $p < .001$	$r = .3677$ $p < .001$
Attitude Toward Teaching Nutrition	$r = .6011$ $p < .001$	

A direct cause-and-effect relationship between the variables cannot be concluded without a careful evaluation of the results. If variance is considered rather than correlation coefficient, the results become more obscure. Variance is equivalent to the square of the correlation coefficient, r. An r value of .3202 for the relationship between attitude toward nutrition education and nutrition knowledge equals a variance of .10. This means that only 10 percent of the variance in nutrition knowledge scores can be explained by attitude toward nutrition education.

Likewise, a correlation coefficient of .3677 between attitude toward teaching nutrition and nutrition knowledge indicates a variance of .14. Only 14 percent of the variance in nutrition knowledge can be attributed to attitude toward teaching nutrition.

From this information, one can only conclude that nutrition

knowledge seems to have a small, but positive influence upon teacher attitudes toward nutrition education and their attitudes toward teaching nutrition.

A higher correlation (r = .6011) was found between teachers' attitudes toward nutrition education and their attitudes toward teaching nutrition. For an r value of .6011, the variance is .36 indicating that 36 percent of the variance in attitude toward teaching nutrition can be explained by attitude toward nutrition education. With this information, a direct relationship can be concluded with more certainty. Teachers' attitudes toward nutrition education seem to have a direct effect upon their attitude toward teaching nutrition. This relationship seems logical.

Relationships Between Attitudes And Independent Variables

The following null hypotheses were evaluated by analysis of variance between mean attitude scores of the various subgroups:

(1) There is no relationship between elementary teachers' attitudes toward nutrition education and . . .

(a) their college nutrition background,

(b) the size of the community in which they teach,

(c) their age,

(d) whether or not they include nutrition as part of classroom teaching, and

(e) how they perceive their principal's attitude toward nutrition education.

(2) There is no relationship between elementary teachers' attitudes toward teaching nutrition and . . .

(a) their college nutrition background,

(b) the size of the community in which they teach,

(c) their age,

(d) whether or not they include nutrition as part of classroom teaching, and

(e) how they perceive their principal's attitudes toward nutrition education.

(3) There is no relationship between elementary principals' attitudes toward nutrition education and . . .

(a) their college nutrition background,

(b) the size of the community in which they work,

(c) their age,

(d) whether or not nutrition is included as part of their schools curriculum, and

(e) how they perceived teachers' attitudes toward nutrition education.

Tables 7, 8 and 9 show the results of analysis of variance between the independent variables and mean attitude scores. Mean scores that showed significant F values ($p < .01$) were further analyzed by the "Tukey's q" test of the estimated mean score. This test calculates the difference needed between two group means for the means to vary significantly.

Teacher attitudes toward nutrition education. Table 7 shows that no significant difference was found in attitudes toward nutrition education between teachers in different age groups, thus prohibiting rejection of the null hypothesis. Mean attitude scores were not significantly related to community size or nutrition background in college. These null hypotheses also cannot be rejected.

Mean attitude scores differed significantly ($p < .001$) between

Table 7

Analysis of Variance Summary for Independent Variables and Teachers' Attitudes Toward Nutrition Education

Independent Variable	Sum of Squares	DF	MS	F	P
Age	.881	2	.440	.929	NS
Community size	2.131	4	.533	1.123	NS
College Nutrition background	.631	2	.315	.664	NS
Inclusion of nutrition in classroom teaching	17.638	2	8.819	21.636	.001
Perception of principal's attitude	9.214	2	4.607	10.660	.001

teachers according to whether or not they included nutrition in classroom instruction. From these results, the null hypothesis was rejected. Teachers who taught nutrition had significantly higher mean attitude scores than those who did not.

The teacher's perception of the principal's attitude toward nutrition education seemed to have a significant ($p < .001$) effect upon attitude. Therefore, the null hypothesis was rejected. None of the teachers indicated that their principal discouraged the teaching of nutrition. However, mean attitudes scores were significantly higher for teachers who thought that the principal supported the teaching of nutrition than for teachers who did not know how their principal felt about nutrition education.

Teacher attitudes toward teaching nutrition. Significant ($p < .001$) relationships (rejection of the null hypotheses) were also found between attitudes toward teaching nutrition and those variables affected by attitude toward nutrition education. Table 8 shows these comparisons.

Mean attitude scores were significantly higher for teachers who include nutrition in classroom instruction than for those who do not. Attitude toward teaching nutrition was significantly higher at the 5 percent level for teachers who included nutrition as a separate unit than for those who integrated nutrition into existing curriculum.

Teachers who perceived that their principal actively supported nutrition education had significantly higher mean scores on attitude toward teaching nutrition than those who did not know how their principal regarded nutrition education.

Table 8

Analysis of Variance Summary for Independent Variables and Teachers' Attitudes Toward Teaching Nutrition

Independent Variable	Sum of Squares	DF	MS	F	P
Age	.049	2	.025	.034	NS
Community size	3.344	4	.836	1.170	NS
College nutrition background	2.978	2	1.489	2.100	NS
Inclusion of nutrition in classroom teaching	46.243	2	23.122	42.618	.001
Perception of principal's attitude	11.009	2	5.504	8.231	.001

Hypotheses describing no relationship between attitude toward teaching nutrition and age, community size and nutrition background cannot be rejected. The results showed no differences in mean attitude scores for these subgroups.

Principal attitudes toward nutrition education. The assessment of principals' attitudes toward nutrition education yielded results similar to the teacher survey. Table 9 shows that no significant relationship was found between mean attitude score and age, community size or college nutrition background prohibiting rejection of the null hypotheses.

Principals' mean attitude scores were significantly ($p < .01$) higher if nutrition education was integrated into the schools curriculum than if it was not a required part of classroom instruction. The null hypothesis indicating no relationship between these variables should be rejected. However, no difference was found in attitude scores between principals in schools requiring nutrition and those not requiring it as part of classroom instruction.

Principals who perceived that teachers in their school supported the teaching of nutrition had significantly ($p < .01$) higher mean attitude scores than principals who did not know how teachers felt about nutrition education. Thus, the null hypothesis was rejected. Principals who perceived that teachers did not want to teach nutrition had significantly lower scores than those who felt teachers were supportive of nutrition education.

Other Observations

Mean attitude scores for all three questionnaires were very positive

Table 9

Analysis of Variance Summary for Independent Variables and Principals' Attitudes Toward Nutrition Education

Independent Variable	Sum of Squares	DF	MS	F	P
Age	.527	2	.263	.457	NS
Community size	2.370	4	.593	1.026	NS
College nutrition background	2.494	2	1.247	2.198	NS
Inclusion of nutrition in curriculum	6.291	3	2.097	3.790	.01
Perception of teachers' attitudes	25.784	3	8,595	18.390	.01

as shown in Table 10. Possible scores ranged from one to seven; seven indicated a highly favorable attitude, one, highly unfavorable. Mean scores of 5.8 and 5.5 seem to indicate that, in general, elementary teachers and principals in South Dakota have very favorable attitudes toward nutrition education in the elementary school.

Table 10

Mean Attitude Scores

Attitude	Mean Score
Teacher Attitude Toward Nutrition Education	5.8
Teacher Attitude Toward Teaching Nutrition	5.5
Principal Attitude Toward Nutrition Education	5.5

A superficial evaluation of choice distributions for individual items in each subscale (see Appendix E) reveals that responses to certain statements seem to be generally less favorable (more than 30 percent of respondents marked 4 or less). Teachers tended to respond less favorably to the following statements:

"The solution of the world's food problem will come through nutrition education of children."

"I would favor legislation requiring nutrition education for children."

"I'd rather teach nutrition than most of the subjects I teach."

"I don't know enough about nutrition to teach it."

"I would like to teach nutrition if I didn't have so many other duties."

Principals also gave less favorable responses (more than 30 percent of respondents marked 4 or less) to certain statements (see Appendix E):

"Children seem to learn nutrition whether or not it's taught in school."

"Nutrition should be taught at home, not at school."

"The solution of the worlds food problem will come through nutrition education of children."

"I would favor legislation requiring nutrition education for children."

Lower response ratings on these selected statements may indicate that some individuals in the sample have some common reservations about nutrition education in the elementary school. Resistance to any legislation requiring that certain subjects be taught is one attitude that may be surfacing here. These areas of less favorable response should be noted.

Evaluation Of The Instrument

The final results of the survey were used to repeat testing for reliability. The computer program Testat was run at the South Dakota State University computer center to obtain an item analysis of the instrument. The item analysis generated correlation coefficients of each item with the total score for each subscale (see Appendix D).

All item-total score correlations were significant at the 1 percent level. This indicates high internal consistency, a measure of reliability. Hopefully, this information will be valuable for other researchers

doing similar studies.

Summary

Results of this study indicate that elementary teachers and principals in South Dakota have positive attitudes toward nutrition education in the elementary school. Elementary teachers also showed positive attitudes toward teaching nutrition.

Elementary teachers in the survey sample, on the average, were between the ages of twenty and thirty-five, worked in communities with populations of less than 2,000, had no nutrition education in college and included nutrition in classroom instruction.

The average elementary principal in the survey sample was thirty-six to fifty years old, worked in a small (less than 2,000 population) community, had no formal nutrition education and worked in schools that required nutrition to be included in school curriculum.

A significant direct relationship was found between elementary teachers' nutrition knowledge and their attitudes toward nutrition education. Similar relationships were observed between nutrition knowledge and attitude toward teaching nutrition and between attitude toward nutrition education and attitude toward teaching nutrition.

Mean attitude scores were significantly higher for teachers and principals if nutrition was included in classroom instruction than if it was not. Teachers who did not know how their principal felt about nutrition education scored significantly lower on mean attitude score than did those who perceived that their principal supported nutrition education. Principals who thought that teachers in their school supported nutrition

education had significantly higher mean attitude scores than principals who did not perceive a favorable attitude on the part of teachers.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

This chapter will summarize the purpose, scope, procedures and results of the study. Recommendations for further study and action will be given.

Summary

The purpose of the study was to determine the attitudes of elementary teachers and principals in South Dakota toward nutrition education in the elementary school and to determine teachers' attitudes toward teaching nutrition. Surveys were sent to a random sample of 361 elementary teachers and the entire population of 285 elementary principals in South Dakota. The final totals of usable surveys were 262 or 73 percent of the teacher sample and 230 or 81 percent of the principal sample.

Teachers and principals were generally very supportive of nutrition education in the elementary school. Most teachers responded favorably to the idea of teaching nutrition to their students.

Significant positive relationships were observed between (1) teachers' nutrition knowledge and their attitudes toward nutrition education, (2) teachers' nutrition knowledge and their attitudes toward teaching nutrition and (3) teachers' attitudes toward teaching nutrition and their attitudes toward nutrition education. Attitudes of both teachers and principals were significantly related to the inclusion of nutrition in classroom instruction. Teachers' attitudes were significantly related to how they perceived principals' attitudes and vice

versa.

Implications

Elementary teachers and principals seem to have very favorable attitudes toward nutrition education in the elementary grades. These findings might be interpreted as support for any effort by individuals representing the state of South Dakota to develop nutrition education curricula. Low mean scores for both teachers and principals on the statement advocating the legislation of nutrition education should be interpreted with caution by those desiring to require nutrition education in the elementary grades.

No relationship was found between teachers' and principals' attitudes and other independent variables such as, age, community size and college nutrition background. One might conclude that all elementary teachers and principals, regardless of age, community size and nutrition background, favor nutrition education in the elementary school. This may reflect the popularity of the topic of nutrition in our society. It is "in" to be concerned about nutrition.

The small, but significant relationship between nutrition knowledge and attitudes should not necessarily be viewed as a cause-and-effect relationship. One would like to believe that educating teachers in nutrition would result in more favorable attitudes toward nutrition education. However, it is possible that, in the past, nutrition educators have not been effective in teaching the affective component of nutrition. Peterson and Kies (1971) agreed with this conclusion.

Some authors have found positive relationships between nutrition

knowledge and attitudes toward nutrition. Werblow et al. (1978) found that nutritional knowledge and background of women athletes were positively correlated with nutrition attitude. Schwartz (1976) obtained similar findings in a study of Canadian public health nurses. However, these researchers measured attitude toward nutrition, not necessarily attitude toward nutrition education.

The relationship between teachers' and principals' attitudes toward nutrition education and the inclusion of nutrition in classroom instruction should be noted. Cook et al. (1977) reached similar conclusions. The idea that principals and teachers are more likely to include nutrition in school curriculum if they support nutrition education is only logical.

The effect of teachers' attitudes toward teaching nutrition upon its inclusion in classroom teaching is another interesting observation. Here again, it seems logical that nutrition is taught if a teacher has a favorable attitude toward teaching it. Perhaps, the most significant implications of these findings relate to the reliability of the instrument.

Teachers' and principals' perceptions of each others attitudes toward nutrition education seem to affect their own attitudes. One might conclude from this that teachers and principals from the same school are likely to possess similar attitudes about nutrition education for their students.

Recommendations

Much more research is needed in the area of attitude measurement,

particularly the measurement of attitude toward nutrition education. If nutrition education is to be included in the curriculum of every school in the United States as proposed in the White House Conference on Food, Nutrition and Health, Final Report (1970), attitudes of school administrators and teachers are important to consider. These are the individuals who determine what subjects are included in elementary school curriculum.

This study should be viewed as merely a preliminary step in the development of an instrument to measure attitudes in the elementary school toward nutrition education and teaching nutrition. The instrument needs to be further tested and refined. Comparison of the questionnaire method of assessing attitudes with other attitude measurement techniques, such as observation and interviews, would be helpful.

Further research needs to be directed toward the relationship between teachers' nutrition knowledge and their attitudes toward nutrition education. If a direct relationship truly exists, teacher nutrition education should be emphasized through in-service training and continuing education.

The ultimate goal of nutrition education is to develop or maintain dietary practices that will maximize health. Disciplined study of these practices and how they are influenced is essential.

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APPENDIX A

TEACHER NUTRITION EDUCATION SURVEY

COVER LETTER A

March 6, 1979

Dear Teacher:

You were randomly selected from a list of all South Dakota elementary teachers to participate in this survey. The survey results will be used in the development of a comprehensive nutrition education plan for the state.

The code number in the upper right hand corner of the survey form is only for identification of returns and to organize mailing. You will remain anonymous.

A pre-paid envelope has been included for your convenience. Your completion and return of the survey form by March 15 will be appreciated.

Thank you for your cooperation!

Dr. Wayne Johnson
Department Head, Nutrition

Karen Pearson
Graduate Student

Beth Davis
Graduate Student

COVER LETTER B

April 10, 1979

Dear Teacher:

You may recall a recent nutrition education survey that was sent to you. The response rate from the survey was good, but not high enough to be a truly representative sample. The purpose of this letter is to ask you to please consider responding to the survey.

Future directions in the development of a comprehensive nutrition education plan for the state depend upon the responses to this survey. Your completion and return of the enclosed survey form (identical to the previous one) by April 30 will be appreciated.

Thank you for your cooperation!

Dr. Wayne Johnson, Head
Nutrition Department

Karen Pearson
Graduate Student

Beth Davis
Graduate Student

QUESTIONNAIRE

PART I

I. This section of the survey is to provide background information for the study.
Circle the one letter that most appropriately describes you and/or your situation.

1. I teach grade(s) . . .

   a. kindergarten
   b. 1
   c. 2
   d. 3
   e. 4
   f. 5
   g. 6
   h. other _____

2. My approximate age is . . .

   a. 20-35 years
   b. 36-50 years
   c. 51 years or older

3. The population of the community in which I teach is . . .

   a. under 500
   b. 500 - 2,000
   c. 2,000 - 5,000
   d. 5,000 - 15,000
   e. over 15,000

4. I received my college degree from . . .

   a. a South Dakota college
   b. an out-of-state college

5. In my college curriculum, nutrition was . . .

   a. a separate course
   b. taught as a part of a health science or other related course
   c. not included

6. In my college curriculum, methods of teaching nutrition was . . .

   a. a separate course
   b. integrated into my general teaching methods classes
   c. not included

7. In my school, nutrition is . . .

   a. a separate unit that I include in the yearly plan in my classroom
   b. taught as an integrated part of our school's curriculum in each grade rather than as a separate unit
   c. not taught as a planned part of my classroom instruction

8. I would prefer to teach nutrition . . .

   a. as a separate unit
   b. as an integrated part of a total school curriculum
   c. other, explain_____

9. In regard to teaching nutrition I feel that I . . .

   a. have adequate nutrition knowledge and the skills to teach it properly
   b. have adequate nutrition knowledge but could use some information on effective methods of teaching nutrition
   c. could use more nutrition information but already possess the skills needed to teach nutrition effectively
   d. could use more nutrition information and some additional information on effective methods of teaching nutrition.

10. I would prefer to have further nutrition education training presented to me in the form of . . .

   a. workshops and in-service training at my school
   b. extension and evening classes in my community
   c. summer school offering at various colleges in S.D.
   d. correspondence or newspaper courses
   e. courses offered over education TV (EPTV)
   f. other - explain

11. I received the majority of my nutrition information from . . .

   a. my college course work
   b. workshops (i.e. those by extension, Dairy Council, etc.)
   c. reading and research on my own

12. My major source of current nutrition information is . . .

   a. Health Professionals (dietitians, extension, doctors, etc.)
   b. Television
   c. Professional Journals (ADA Journal, School Lunch Journal, etc.)
   d. Popular magazines (Ladies Home Journal, Redbook, etc.)
   e. Radio
   f. Newspapers
   g. Other (please list)

13. I would best describe the attitude of our school principal toward nutrition education as . . .

a. actively supports and encourages the teaching of nutrition
b. doesn't care whether or not nutrition is taught
c. discourages the teaching of nutrition
d. I don't really know.

QUESTIONNAIRE

PART II

II. This section of the survey is to determine the level of your nutrition knowledge. Each number reflects a degree of certainty as follows:

(1) I'm sure this statement is correct
(2) I'm fairly certain this statement is correct
(3) I think this statement is correct
(4) I'm undecided as to whether this statement is true or false
(5) I think this statement is false
(6) I'm fairly certain this statement is false
(7) I'm sure this statement is false

Circle the one number that most accurately reflects your knowledge of that question.

		Correct for Sure	*Fairly Certain*	*Think its Correct*	*Undecided*	*Think its False*	*Fairly Certain*	*False for Sure*
1.	The "Basic Four" food groups are: (1) milk & other dairy foods; (2) meat, poultry, fish, eggs, nuts & legumes; (3) fruits & vegetables; (4) breads & cereals.	1	2	3	4	5	6	7
2.	It is not necessary to include a food from each of the food groups in every meal in order to insure an adequate daily diet.	1	2	3	4	5	6	7
3.	A child's individual food choices are not likely to be affected by his family's economic status.	1	2	3	4	5	6	7

		Correct for Sure	Fairly Certain	Think its Correct	Undecided	Think its False	Fairly Certain	False for Sure
4.	An extra supply of one nutrient can make up for a shortage of another. (For example, extra carbohydrates can make up for a fat deficiency.)	1	2	3	4	5	6	7
5.	Food advertisements many times are not completely honest and/or factual.	1	2	3	4	5	6	7
6.	In order to sell a food product, advertising appeals to our psychological needs for love and affection as much or more than our need for body nourishment.	1	2	3	4	5	6	7
7.	The essential nutrients needed by the body are: protein, carbohydrates, fats, minerals, vitamins and water.	1	2	3	4	5	6	7
8.	Most people in our country get enough Vitamin A and C so no special effort to include foods high in these vitamins is necessary.	1	2	3	4	5	6	7
9.	Obesity is an example of a malnutrition problem.	1	2	3	4	5	6	7
10.	The type of sugar you eat and the number of times a day you eat a sugar product has no relationship to the development of cavities.	1	2	3	4	5	6	7

		Correct for Sure	Fairly Certain	Think its Correct	Undecided	Think its False	Fairly Certain	False for Sure
11.	The U.S. RDA's of essential nutrients for students are the same whether that student is a boy or a girl.	1	2	3	4	5	6	7
12.	A large boned, physically active 14-year old boy will require different amounts of various nutrients than will a smaller framed, less active boy of the same age group.	1	2	3	4	5	6	7
13.	In the U.S. malnutrition is mainly a problem of the poor.	1	2	3	4	5	6	7
14.	One of the major factors affecting children's eating habits is peer pressure.	1	2	3	4	5	6	7
15.	Fortified grain products, like cereal and pasta are sources of the vitamins - thiamin, niacin & riboflavin.	1	2	3	4	5	6	7
16.	It is important to vary your food choices, choosing from both the plant and animal groups and making different choices from each group daily.	1	2	3	4	5	6	7
17.	A proper diet can help provide resistance to the development of dental caries (cavities).	1	2	3	4	5	6	7
18.	Milk is a good source of protein.	1	2	3	4	5	6	7

		Correct for Sure	Fairly Certain	Think its Correct	Undecided	Think its False	Fairly Certain	False for Sure
19.	The U.S. RDA's are the United States Recognized Daily Allotments (of food) of the average healthy person.	1	2	3	4	5	6	7
20.	A well balanced diet is achieved when food from each of the food groups is eaten in the amounts recommended.	1	2	3	4	5	6	7
21.	A banana cream pie can be kept safely at room temperature for several hours.	1	2	3	4	5	6	7
22.	Every person needs the same nutrients, in varying amounts, throughout his or her life cycle.	1	2	3	4	5	6	7
23.	Young children need to be taught to make wise food choices.	1	2	3	4	5	6	7
24.	It is now mandatory for every canned product to carry nutrition information on its label.	1	2	3	4	5	6	7
25.	A Type A school lunch has been planned so as to meet ½ of the child's daily food requirements.	1	2	3	4	5	6	7
26.	The form of a product (fresh, frozen, canned or freeze-dried) does not affect its nutrient content greatly.	1	2	3	4	5	6	7

QUESTIONNAIRE

PART III

III. This section of the survey is to find out how you feel about nutrition education being taught at the elementary level. Circle the one number that most accurately describes your feelings.

		Strongly Agree	Tend to Agree	Slightly Agree	Undecided	Slightly Disagree	Tend to Disagree	Strongly Disagree
1.	Nutrition should be taught at an early age to achieve good eating habits.	1	2	3	4	5	6	7
2.	Teaching nutrition in the elementary grades may influence a child's health.	1	2	3	4	5	6	7
3.	I see no value in nutrition education.	1	2	3	4	5	6	7
4.	I feel it would be inappropriate to teach nutrition to elementary students even though some may benefit from it.	1	2	3	4	5	6	7
5.	It is a child's right to be taught nutrition in elementary school.	1	2	3	4	5	6	7
6.	Compared to the other subjects I teach, nutrition is a frivolous subject.	1	2	3	4	5	6	7
7.	Children seem to learn nutrition whether or not it's taught in school.	1	2	3	4	5	6	7
8.	Nutrition knowledge is needed by everyone.	1	2	3	4	5	6	7

		Strongly Agree	Tend to Agree	Slightly Agree	Undecided	Slightly Disagree	Tend to Disagree	Strongly Disagree
9.	Nutrition should be taught at home, not at school.	1	2	3	4	5	6	7
10.	Teachers of the elementary grades should teach the basics such as the 3 R's and not worry about teaching nutrition.	1	2	3	4	5	6	7
11.	Nutrition education should have high priority in elementary school curriculum.	1	2	3	4	5	6	7
12.	Nutrition should be taught in high school, not at the elementary level.	1	2	3	4	5	6	7
13.	It is useless to teach elementary students nutrition because they have very little control over what they eat.	1	2	3	4	5	6	7
14.	I am intensely interested in nutrition education for children.	1	2	3	4	5	6	7
15.	Sometimes I feel nutrition education is necessary at a young age and sometimes I doubt it.	1	2	3	4	5	6	7
16.	It is doubtful whether or not nutrition education can improve the quality of life.	1	2	3	4	5	6	7
17.	More money should be spent on nutrition education for children.	1	2	3	4	5	6	7

		Strongly Agree	Tend to Agree	Slightly Agree	Undecided	Slightly Disagree	Tend to Disagree	Strongly Disagree
18.	The solution of the world's food problem will come through nutrition education of children.	1	2	3	4	5	6	7
19.	Nutrition education in the elementary grades is more valuable than most people think.	1	2	3	4	5	6	7
20.	I would favor legislation requiring nutrition education for children.	1	2	3	4	5	6	7

QUESTIONNAIRE

PART IV

IV. This section of the survey is to find out how you feel about teaching nutrition. There are not right or wrong answers. Circle the one number that most accurately describes your feelings.

		Strongly Agree	Tend to Agree	Slightly Agree	Undecided	Slightly Disagree	Tend to Disagree	Strongly Disagree
1.	I'd rather teach nutrition than most of the subjects that I teach.	1	2	3	4	5	6	7
2.	I am confident that I have the ability to teach nutrition.	1	2	3	4	5	6	7
3.	It should not be my responsibility to teach nutrition.	1	2	3	4	5	6	7
4.	I would enjoy teaching nutrition if I had some good resource materials.	1	2	3	4	5	6	7
5.	I'd love to teach nutrition to my students!	1	2	3	4	5	6	7
6.	I would teach nutrition only if I were forced to.	1	2	3	4	5	6	7
7.	I don't know enough about nutrition to teach it.	1	2	3	4	5	6	7
8.	I have no desire to have anything to do with nutrition education.	1	2	3	4	5	6	7
9.	I really don't care whether or not I teach nutrition.	1	2	3	4	5	6	7

		Strongly Agree	Tend to Agree	Slightly Agree	Undecided	Slightly Disagree	Tend to Disagree	Strongly Disagree
10.	It would really be a chore to have to teach nutrition.	1	2	3	4	5	6	7
11.	I think teaching nutrition would be very exciting.	1	2	3	4	5	6	7
12.	I would like to teach nutrition to my students if I had more time.	1	2	3	4	5	6	7
13.	I might enjoy teaching nutrition.	1	2	3	4	5	6	7
14.	I would probably dislike teaching nutrition.	1	2	3	4	5	6	7
15.	I would like to teach nutrition if I didn't have so many other duties.	1	2	3	4	5	6	7
16.	I would be upset if I had to prepare myself to teach nutrition.	1	2	3	4	5	6	7

V. After making sure that you have completed all sections of the survey, make comments on the survey and/or nutrition education in the following space. (The back of the survey form may be used as well.) Thank you for your cooperation!

APPENDIX B

PRINCIPAL NUTRITION EDUCATION SURVEY

COVER LETTER A

May 1, 1979

Dear Principal:

Enclosed is a survey instrument which has been designed to assess current nutrition education practices in South Dakota schools and the level of interest/concern about nutrition education among elementary school administrators. Information gained from the survey may be used to project future directions of the nutrition education curriculums in South Dakota.

You have been selected from a list of all South Dakota elementary principals to participate in this survey. The code number in the upper right hand corner of the form is only for identification of returns and to organize mailing. Your response will be anonymous.

A prepaid envelope has been included for your convenience. Completion and return of the survey form by May 15 will be appreciated.

Thank you for your cooperation!

Beth Davis, R.D.
Nutrition Graduate Student

Wayne A. Johnson, Ph.D.
Head, Nutrition-Food Science

COVER LETTER B

May 21, 1979

Dear Principal:

You were recently sent a survey instrument designed to assess current nutrition education practices in South Dakota schools and the level of interest/concern about nutrition education among elementary school administrators. Information gained from the survey may be used to project future directions of the nutrition education curriculums in South Dakota.

You have been selected from a list of all South Dakota elementary principals to participate in this survey. The code number in the upper right hand corner of the form is only for identification of returns and to organize mailing. Your response will be anonymous.

A prepaid envelope has been included for your convenience. Completion and return of the survey form by June 1 will be appreciated.

Thank you for your cooperation!

Beth Davis, R.D.
Nutrition Graduate Student

Wayne A. Johnson, Ph.D.
Head, Nutrition-Food Science

QUESTIONNAIRE

PART I

I. This section of the survey is to provide background information for the study.
Circle the one letter that most appropriately describes you and/or your situation.

1. My approximate age is . . .

   a. 20-35 years
   b. 36-50 years
   c. 51 years or older

2. The population of the community in which I work is . . .

   a. under 500
   b. 500 - 2,000
   c. 2,000 - 5,000
   d. 5,000 - 15,000
   e. over 15,000

3. In my college curriculum, nutrition was . . .

   a. a separate course
   b. taught as a part of a health science or other related course
   c. not included

4. In my school, nutrition is . . .

   a. a separate unit that must be included in the yearly plan in each classroom
   b. taught as an integrated part of our school's curriculum in each grade rather than as a separate unit
   c. not a required part of classroom instruction
   d. other, explain _____

5. I would prefer to have nutrition taught . . .

   a. as a separate unit by each teacher
   b. as an integrated part of a total school curriculum
   c. other, explain _____

6. I would prefer to have further nutrition education training presented to elementary teachers in the form of . . .

   a. workshops and in-service training at my school
   b. extension and evening classes in my community
   c. summer school offering at various colleges in S.D.

d. correspondence or newspaper courses
e. courses offered over education TV (EPTV)
f. other - explain _____

7. I would best describe the attitude of most teachers in my school toward nutrition education as . . .

a. positively supports the teaching of nutrition
b. do not care whether or not nutrition is taught
c. would prefer not to teach nutrition
d. I don't really know.

QUESTIONNAIRE

PART II

II. This section of the survey is to find out how you feel about nutrition education being taught in elementary school. Circle the one number that most accurately describes your feelings.

	Strongly Agree	Tend to Agree	Slightly Agree	Undecided	Slightly Disagree	Tend to Disagree	Strongly Disagree
1. Nutrition should be taught at an early age to achieve good eating habits.	1	2	3	4	5	6	7
2. Teaching nutrition in the elementary grades may influence a child's health.	1	2	3	4	5	6	7
3. I see no value in nutrition education.	1	2	3	4	5	6	7
4. I feel it would be inappropriate to teach nutrition to elementary students even though some may benefit from it.	1	2	3	4	5	6	7
5. It is a child's right to be taught nutrition in elementary school.	1	2	3	4	5	6	7
6. Compared to other subjects taught in the elementary grades, nutrition is a frivolous subject.	1	2	3	4	5	6	7
7. Children seem to learn nutrition whether or not it's taught in school.	1	2	3	4	5	6	7

		Strongly Agree	Tend to Agree	Slightly Agree	Undecided	Slightly Disagree	Tend to Disagree	Strongly Disagree
8.	Nutrition knowledge is needed by everyone.	1	2	3	4	5	6	7
9.	Nutrition should be taught at home, not at school.	1	2	3	4	5	6	7
10.	Teachers of the elementary grades should teach the basics such as the 3 R's and not worry about teaching nutrition.	1	2	3	4	5	6	7
11.	Nutrition education should have high priority in elementary school curriculum.	1	2	3	4	5	6	7
12.	Nutrition should be taught in high school, not at the elementary level.	1	2	3	4	5	6	7
13.	It is useless to teach elementary students nutrition because they have very little control over what they eat.	1	2	3	4	5	6	7
14.	I am intensely interested in nutrition education for children.	1	2	3	4	5	6	7
15.	Sometimes I feel nutrition education is necessary at a young age and sometimes I doubt it.	1	2	3	4	5	6	7
16.	It is doubtful whether or not nutrition education can improve the quality of life.	1	2	3	4	5	6	7
17.	More money should be spent on nutrition education for children.	1	2	3	4	5	6	7

		Strongly Agree	Tend to Agree	Slightly Agree	Undecided	Slightly Disagree	Tend to Disagree	Strongly Disagree
18.	The solution of the world's food problem will come through nutrition education of children.	1	2	3	4	5	6	7
19.	Nutrition education in the elementary grades is more valuable than most people think.	1	2	3	4	5	6	7
20.	I would favor legislation requiring nutrition education for children.	1	2	3	4	5	6	7

APPENDIX C

PRE-TEST QUESTIONNAIRE

PRE-TEST QUESTIONNAIRE

PART I

Below are several statements concerning whether or not nutrition should be taught at the elementary school level. Teachers may have different opinions about this. Please indicate your agreement or disagreement by circling the appropriate number from 1 to 7 according to the following code:

1 - I strongly agree
2 - I agree
3 - I would tend to agree
4 - I am undecided
5 - I would tend to disagree
6 - I would disagree
7 - I would strongly disagree

	Strength of Attitude						
1. I feel it would be inappropriate to teach nutrition to my students although there are other children who may need it.	1 SA	2 A	3 TA	4 U	5 TD	6 D	7 SD
2. Nutrition education is relevant to the lives of elementary students.	1	2	3	4	5	6	7
3. Nutrition should be taught at an early age to achieve good eating habits.	1	2	3	4	5	6	7
4. Teaching nutrition in the elementary grades may influence a child's health.	1	2	3	4	5	6	7
5. I consider nutrition to be a frivolous subject in the elementary grades when compared to the other subjects I teach.	1	2	3	4	5	6	7
6. Nutrition should not be taught in the school system.	1	2	3	4	5	6	7
7. It is a child's right to be taught nutrition in elementary school.	1	2	3	4	5	6	7
8. There are many subjects that are much more important than nutrition in the elementary school curriculum.	1	2	3	4	5	6	7
9. Children seem to learn nutrition whether or not it's taught in school.	1	2	3	4	5	6	7

		Strength of Attitude						
10.	Nutrition education is needed by everyone.	1	2	3	4	5	6	7
11.	Nutrition should be taught at home not at school.	1	2	3	4	5	6	7
12.	Nutrition knowledge is very practical for a child.	1	2	3	4	5	6	7
13.	Teachers of the elementary grades should teach the basics, such as the 3 R's, and not worry about teaching nutrition.	1	2	3	4	5	6	7
14.	Nutrition education should have high priority in elementary school curriculum.	1	2	3	4	5	6	7
15.	Nutrition should be taught in high school instead of at the elementary level.	1	2	3	4	5	6	7
16.	Nutrition is an important subject for every elementary student.	1	2	3	4	5	6	7
17.	It is useless to teach elementary students nutrition because they have very little control over what they eat.	1	2	3	4	5	6	7
18.	I feel nutrition education is unimportant at any level.	1	2	3	4	5	6	7
19.	Nutrition should be taught at both the elementary and high school level.	1	2	3	4	5	6	7
20.	Learning about nutrition is valuable to a child.	1	2	3	4	5	6	7

QUESTIONNAIRE - PART II

Below are several statements concerning your feelings about teaching nutrition. There are no right or wrong answers. Please indicate honestly your agreement or disagreement by circling the appropriate number from 1 to 7 according to the following code:

1 - I strongly agree
2 - I agree
3 - I would tend to agree
4 - I am undecided
5 - I would tend to disagree
6 - I disagree
7 - I strongly disagree

		Strength of Attitude						
1.	I'd rather teach nutrition than most of the subjects I must teach.	1 SA	2 A	3 TA	4 U	5 TD	6 D	7 SD
2.	I would rather have someone else teach my students nutrition than to teach it myself.	1	2	3	4	5	6	7
3.	Teaching nutrition would be dull for me.	1	2	3	4	5	6	7
4.	I am confident in my ability to teach nutrition to my students.	1	2	3	4	5	6	7
5.	It should not be my responsibility to teach nutrition.	1	2	3	4	5	6	7
6.	I would enjoy teaching nutrition if I had some good resource materials.	1	2	3	4	5	6	7
7.	If I had some outside help from a nutrition specialist I would be willing to teach nutrition.	1	2	3	4	5	6	7
8.	I'd love to teach nutrition to my students!	1	2	3	4	5	6	7
9.	I would probably like teaching nutrition, but I'm not sure.	1	2	3	4	5	6	7
10.	I would teach nutrition only if I were forced to.	1	2	3	4	5	6	7
11.	I don't know enough about nutrition to teach it.	1	2	3	4	5	6	7

APPENDIX D

ITEM ANALYSIS OF ATTITUDE QUESTIONNAIRES

Table 11

Item Analysis of Attitude Questionnaires

Principals' Attitudes Toward Nutrition Education				Teachers' Attitudes Toward Nutrition Education				Teachers' Attitudes Toward Teaching Nutrition			
Item	Mean	Sigma	R	Item	Mean	Sigma	R	Item	Mean	Sigma	R
1	6.69	.68	*.52	1	6.62	.99	*.63	1	3.26	1.54	*.41
2	6.52	.71	*.57	2	6.56	.91	*.57	2	5.21	1.57	*.52
3	6.58	1.02	*.44	3	6.65	1.01	*.51	3	5.46	1.56	*.59
4	6.43	1.04	*.48	4	6.63	.91	*.70	4	5.63	1.51	*.56
5	5.48	1.79	*.37	5	5.98	1.51	*.57	5	5.69	1.34	*.70
6	5.53	1.71	*.49	6	5.90	1.55	*.64	6	6.02	1.33	*.71
7	5.02	1.67	*.47	7	5.65	1.56	*.55	7	4.82	1.91	*.55
8	6.55	.94	*.44	8	6.64	.96	*.58	8	6.17	1.19	*.78
9	4.47	2.16	*.47	9	5.12	1.81	*.58	9	5.94	1.40	*.72
10	5.64	1.59	*.63	10	6.00	1.39	*.73	10	5.95	1.45	*.75

*Correlation significant at the .01 level.

Table 11 (continued)

Principals' Attitudes Toward Nutrition Education				Teachers' Attitudes Toward Nutrition Education				Teachers' Attitudes Toward Teaching Nutrition			
Item	Mean	Sigma	R	Item	Mean	Sigma	R	Item	Mean	Sigma	R
11	5.10	1.60	*.64	11	5.28	1.59	*.63	11	5.45	1.42	*.72
12	5.65	1.51	*.53	12	5.71	1.50	*.64	12	5.40	1.78	*.47
13	5.75	1.55	*.48	13	5.98	1.44	*.62	13	5.68	1.60	*.57
14	5.59	1.40	*.61	14	5.83	1.35	*.59	14	6.00	1.39	*.77
15	4.57	2.09	*.46	15	4.98	1.88	*.46	15	4.71	2.06	*.27
16	5.84	1.46	*.48	16	5.95	1.24	*.54	16	5.83	1.52	*.72
17	4.70	1.62	*.55	17	5.03	1.59	*.52				
18	3.91	1.86	*.54	18	4.28	1.63	*.32				
19	5.87	1.21	*.66	19	6.10	1.04	*.54				
20	3.71	2.10	*.50	20	4.91	1.75	*.46				

*Correlation significant at the .01 level.

APPENDIX E

CHOICE DISTRIBUTIONS FOR ATTITUDE QUESTIONNAIRES

Table 12

Choice Distributions for Questionnaires Measuring Teachers' Attitudes Toward Nutrition Education

Item	Response Choice Frequency							
	Omit	1	2	3	4	5	6	7
* 1	2	1	3	0	2	5	49	200
* 2	2	1	1	0	1	7	74	176
** 3	2	3	1	0	1	5	41	209
** 4	2	1	1	0	4	3	56	195
* 5	3	6	6	0	27	8	83	129
** 6	3	3	9	12	13	21	75	126
** 7	2	4	7	22	16	26	92	93
* 8	2	2	0	1	2	7	45	203
** 9	9	2	15	25	29	41	73	68
**10	3	3	4	9	6	32	85	120
*11	2	5	11	20	34	45	80	65
**12	4	3	7	7	19	45	82	95
**13	2	4	9	7	7	20	96	117
*14	2	4	4	5	16	45	90	96
**15	4	5	25	33	35	20	69	71

*Items stated positively; scores are reversed.
**Items stated negatively.

Table 12 (continued)

Item	Response Choice Frequency							
	Omit	1	2	3	4	5	6	7
**16	0	3	3	7	23	22	102	102
*17	1	6	18	13	58	36	84	46
*18	1	9	40	21	82	34	54	21
*19	1	1	0	3	15	31	104	107
*20	1	20	12	6	63	36	76	48

*Items stated positively; scores are reversed.
**Items stated negatively.

Table 13

Choice Distributions for Questionnaires Measuring Teachers' Attitudes Toward Teaching Nutrition

Item	Response Choice Frequency							
	Omit	1	2	3	4	5	6	7
* 1	4	32	54	54	64	30	21	3
* 2	0	8	16	12	35	52	85	54
** 3	2	7	5	15	35	37	84	77
* 4	3	5	8	9	19	36	102	80
* 5	3	2	1	6	35	45	85	85
** 6	2	0	8	8	11	25	87	121
** 7	4	10	24	37	31	29	65	62
** 8	2	2	1	0	18	30	73	136
** 9	2	4	3	8	20	27	80	118
**10	3	4	3	6	22	27	72	125
*11	3	2	6	13	28	59	88	63
*12	8	9	8	9	21	40	90	77
*13	8	6	3	4	14	34	112	81
**14	6	1	2	2	17	28	90	116
*15	9	21	20	18	32	35	72	55
**16	5	4	3	4	26	31	77	112

*Items stated positively; scores are reversed.
**Items stated negatively.

Table 14

Choice Distributions for Questionnaires Measuring Principals' Attitudes Toward Nutrition Education

Item	Response Choice Frequency							
	Omit	1	2	3	4	5	6	7
* 1	0	1	0	1	1	5	49	173
* 2	0	0	0	1	4	11	73	141
** 3	1	2	1	1	6	7	36	176
** 4	0	2	4	1	3	11	64	145
* 5	10	6	5	3	24	21	93	68
** 6	5	3	9	19	14	19	85	76
** 7	1	3	18	35	21	24	89	39
* 8	0	2	1	3	3	5	55	161
** 9	20	8	19	26	24	24	74	35
**10	4	2	9	15	6	35	79	80
*11	3	5	12	18	25	49	80	38
**12	6	1	4	6	21	35	85	72
**13	0	7	8	16	2	24	87	86
*14	2	4	6	9	8	53	90	58
**15	18	6	12	29	40	20	62	43

*Items stated positively; scores are reversed.
**Items stated negatively.

Table 14 (continued)

Item	Response Choice Frequency							
	Omit	1	2	3	4	5	6	7
**16	2	5	6	8	8	16	105	80
*17	2	8	20	12	56	44	64	24
*18	5	21	43	15	56	34	39	17
*19	1	3	2	5	13	29	108	69
*20	2	59	19	12	54	23	38	23

*Items stated positively; scores are reversed.
**Items stated negatively.